Space Weather Forecast

Issued on Tuesday 28 January 2025 at 12:12 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of isolated Moderate flares. Chance of G1 minor geomagnetic storms on day 4 (31 Jan).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity has been at Low levels, with no significant flares observed through the period.

There are currently seven sunspot regions visible on the Earth-facing disc. All regions on the visible disc are generally small and relatively simple. However, the two new regions emerging in the northeast were magnetically complex and produced significant flares on their previous rotation, they will need careful monitoring as they cross the disk.

No Earth-directed Coronal Mass Ejections (CMEs) have been observed in the last 24 hours.

Solar Wind / Geomagnetic Activity: The solar wind was at background levels, around 300 km/s. The Interplanetary Magnetic Field was weak to moderate. The north-south component varied weakly. Geomagnetic activity was Quiet (Kp0-2) with one Unsettled (Kp3) interval 27/1500-1800UTC.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate solar activity is expected with a chance of further isolated Moderate flares, and a slight chance of Strong flares.

Solar Wind / Geomagnetic Activity: A CME associated with a filament eruption around midnight on 26 Jan may give a weak glancing blow late on Day 1 (28 Jan) or early on Day 2 (29 Jan), albeit this is low confidence with most of the CME expected to miss Earth. A large coronal hole, currently in the eastern hemisphere, may cause an enhancement to solar winds on Day 4 (31 Jan).

Quiet to Unsettled activity (Kp0-3) is generally expected through the forecast period, with a very slight chance of Active to G1/Minor Storm (Kp4-5) intervals late Day 1 (28 Jan) or early Day 2 (29 Jan) should any glancing CME arrive. A rising risk of Active, or possibly G1 minor storm, intervals then on Day 4 (31 Jan) with any arrival of coronal hole fast winds.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 370 900 0100 Email: enquiries@metoffice.gov.uk

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Energetic Particles / Solar Radiation: There is a slight chance of enhancements exceeding the S1/Minor Radiation Storm threshold, should any larger flares occur from the western hemisphere.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	10	10	30
Strong	G3	No	1	1	1	5
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	No	30	30	40	40
Very Active	R3-R5 (X Class)	No	1	1	5	5

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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